

ABSTRACT

A method for optimal workforce scheduling is disclosed for an environment in which workload due to a plurality of contact types vary both during the course of an operating day and from one day to another during scheduling period (e.g. a week). The method begins by acquiring agent and skill requirements for all periods and contact types to be scheduled. The method also acquires the contact center information including agent skill groups, agent work groups, tour and shift scheduling rules, agent availability, objective criterion to be optimized and its parameters. The method then develops a Mixed Integer Programming (MILP) model for the scheduling environment to meet all requirements and constraints. The method applies an optimization algorithm that uses the Branch and Cut (B&C) algorithm with a Rounding Algorithm to improve performance. The MILP models disclosed use an innovative implicit break and days-off scheduling approach to reduce the size of the MILP problem to be solved. The method is unique in it's ability to locate a globally optimal workforce schedule with the lowest possible cost or paid (also scheduled) time or the maximum agent satisfaction. Once an optimal solution to the MILP model is found, a detailed optimal schedule is developed by assigning daily shifts to work patterns and the breaks scheduled to daily shifts, and days off scheduled to weekly tours.